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## In the Board of Patent Appeals and Interferences
## United States Patent and Trademark Office

October 15, 2006

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|---|---|
| **In re Application of** | Caldwell et al. |
| **Serial Number** | 09/761,604 |
| **Filed** | 1/16/2001 |
| **For** | Natural Language Product Comparison Guide Synthesizer |
| **Examiner** | Kindred, Alford W |
| **Art Unit** | 2172 |
| **Confirmation Number** | 5820 |
| **Attorney Docket Number** | CO2-2 |

### Honorable Board of Patent Appeals and Interferences

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

### AMENDMENTS TO APPEAL BRIEF

In response to the Notification of Non-Compliant Appeal Brief mailed on 10/11/2006, the Applicants have amended the section of the Appeal Brief, Summary of Claimed Subject Matter, to include, as per request of Patent Appeal Center Specialist, Each independent claim 1 and 8 argued clearly provided and the claims explicitly mentioned and referred to in the Summary section.

No other changes were made to the Appeal Brief. The Amended Appeal Brief begins on page 2 of this submission.

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# AMENDED APPEAL BRIEF

## REAL PARTY IN INTEREST

The real party of interest in the present patent application is CoGenTex, Inc., having principal place of business at 840 Hanshaw Road, Ithaca, NY 14850 USA.

## RELATED APPEALS AND INTERFERENCES

A prior Appeal was filed on 11/20/2004. The prosecution was reopened by the Examiner prior to a decision on the merits by the Board. To the Applicants' knowledge, there are no other prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision.

## STATUS OF CLAIMS

Claims 1, 3, 5 through 11, 13, and 14 were finally rejected by the Examiner and are appealed.

Claims 2, 4, and 12 are cancelled.

## STATUS OF AMENDMENTS

All amendments have been entered.

## SUMMARY OF CLAIMED SUBJECT MATTER

The present invention defines a method of creating a system that automatically and dynamically generates personalized product recommendations in fluent natural language. The method provides customers with a personalized recommendation of a product in fluent, user-specific text, based on a number of product features *as related to customer's preferences and requirements* (user profile) – for example:

> "*It has the best collection of convenience features, which is important if you just want to take vacation snapshots. It has lower ratings in Portability and Image Quality, which are*

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*also high on the list for the basic snapshot taker, but has high scores in Storage and Connectivity."* (Paragraphs [56,65]).

Independent Claim 1 of the invention teaches

A method of creating an automated natural language product recommendation system for providing customers with a personalized recommendation of a product having a plurality of features, each customer being associated with a user profile comprising a collection of values of features that are considered to be suitable for a user of the product, comprising the steps of:

    i.    developing feature text snippets for each feature, the snippets being phrases to be used when describing or referring to particular product features;

    ii.    developing user profile text snippets for each user profile, the snippets being phrases to be used when describing or referring to particular user profiles;

    iii.    providing generic phrases such that combining the generic phrases with feature text snippets and user profile text snippets produces a personalized recommendation for the product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences.

The method taught in Claim 1 comprises the following steps, with references to specification and drawings:

    a)    Developing phrases describing particular product features ("feature text snippets") for each feature - Paragraphs [26,48-52,71]; Figure 1);

    b)    Developing phrases describing particular user preferences and requirements, or collections thereof ("user profile text snippets"), for each user profile – Paragraphs [27,28,53-59,70]; Figure 1); and

    c)    Providing generic phrases which, if combined with feature text snippets and user profile text snippets produce a personalized recommendation for the product (Paragraphs 63,69,72,73).

The recommendation is provided as a dynamically generated fluent natural language text, with an appropriate overall rhetorical structure conveying a product analysis and recommendation which

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is tailored to the user's requirements and preferences – i.e., it explains why the features of a product are important for the user (Paragraphs [73-78]).

Additional features of the method of the present invention include:

a) Testing the feature text snippets (Paragraphs [48-52]; Figure 2 Ref. 3) – Claim 3;

b) Testing the user profile text snippets (Paragraphs [57-59]; Figure 2 Ref. 5) – Claim 5;

c) Providing access to the product recommendation over a computer network (Paragraphs [32]; Figure 2 Ref. 29,36) – Claim 6;

d) Providing customers with personalized product recommendations over a computer network, which are developed by combining the generic phrases with feature text snippets and user profile text snippets, and are produced as dynamically generated fluent text that conveys product analyses and recommendations tailored to the user requirements and preferences (Paragraphs [73-78]; Figure 1 Ref. 6) – Claim 7.

Another embodiment is defined in independent Claim 8, which teaches

A method of providing customers with personalized natural language product recommendations over a computer network comprising the steps of:

a) creating an automated product recommendation system for providing customers with a personalized recommendation of a product having a plurality of features, based on a user profile comprising a collection of values of features that are considered to be suitable for a type of user of the product, comprising the steps of:

    i. developing feature text snippets for each feature, the snippets being phrases to be used when describing or referring to particular product features;

    ii. developing user profile text snippets for each user profile, the snippets being phrases to be used when describing or referring to particular user profiles; and

    iii. providing generic phrases;

b) accepting a request from a customer over a computer network, the request comprising selecting a user profile defining preferred values for product features;

c) generating a ranked list of products using preferred values from the user profile, and product feature data, such that rankings are based on each product's feature data weighted according to the preferred values;

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d)  combining generic phrases with feature text snippets for individual features and user profile text snippets for user profiles to generate a display comprising a personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences; and

e)  returning the display to the customer over the computer network.

This embodiment of the present invention, as claimed in the above recited independent Claim 8, defines a method of providing customers with personalized fluent natural language product recommendations over a computer network for a product with a number of features (Paragraphs [32,73-78]; Figure 2). The method with references to specification and drawings includes:

a)  Developing an automated product recommendation system, which is based on a user profile, which is a set of values of features that are suitable for a particular user (Paragraphs [23-29, 31]; Figure 1). Developing automated product recommendation system includes:

    i.   Developing phrases describing particular product features ("feature text snippets") for each feature (Paragraphs [26,48-52,71]; Figure 1 Ref. 3);

    ii.  Developing phrases describing particular user profile ("user profile text snippets") for each user profile (Paragraphs [27,28,53-59,70]; Figure 1 Ref. 5); and

    iii. Providing generic phrases for constructing product recommendations (Paragraphs [63,69,72,73]; Figure 1 Ref. 6).

The method of Claim 8 further includes:

b)  Taking a request from a customer over a computer network and selecting a user profile which defines preferred values for product features; (Paragraphs [32]; Figure 2 Ref. 36,29,25);

c)  Generating a ranked list of products using preferred values from the user profile (user preferences) and product feature data. The product rankings are based on each product's feature data weighted according to the user preferences (Paragraphs [32]; Figure 2 Ref. 32,27,33,25);

d)  Combining generic phrases with feature text snippets and user profile text snippets and generating a display with personalized recommendation of a product, featuring

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dynamically generated fluent text. This text conveys product analysis and

recommendation tailored to the user requirements and preferences (Paragraphs [32];

Figure 2 Ref. 26,22,25);

e)  Returning the display to the customer over the computer network (Paragraphs [32]; Figure

2 Ref. 21,36,29).

Further embodiments of present invention also include these additional steps with

references to the specification and drawings:

a)  Storing the preferred values in a user preferences database (Paragraphs [31,32]; Figure 2

Ref. 22) – Claim 9;

b)  Requesting preferred values for product features by specifying a user preference from a

database (Paragraphs [32]; Figure 2 Ref. 33,25) – Claim 10;

c)  Further defining the display with personalized recommendation of a product generated to

include a display and explanation of product rankings based on user requirements and

preferences (Paragraphs [32]; Figure 2 Ref. 21,22,36,29,26,25) – Claim 11;

d)  Developing groupings of the features, which serve to organize features thematically

whereas these groupings can themselves be viewed as features (Paragraphs [35-40];

Figure 1 Ref. 1) – Claim 14.

## GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 5 through 11, 13, and 14 stand finally rejected under 35 USC 103 (a) as being

unpatentable over Tavor, US # 2001/0032077A1 in view of Mikurak, US 2004/0064351A1.

Claims 1, 3, 5, 6, 7, 8, 9, 10, 11, 13, and 14 do not fall and stand together. Claims are

argued separately because of different claimed subject matter and different arguments against

claims by the Examiner.

## ARGUMENT

### Rejections under 35 USC § 103

Claims 1, 3, 5 through 11, 13, and 14 stand finally rejected under 35 USC 103 (a) as being unpatentable over Tavor, US # 2001/0032077A1 in view of Mikurak, US 2004/0064351A1.

### Response to Claims Rejections

To establish a prima facie case of obviousness, three basic criteria must be met. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (MPEP 2143).

The applicants will demonstrate that the combination of references does not result in the claimed invention.

### Claims 1, 3, 13-14

**The Tavor reference**

In making the rejection, the examiner stated that:

"As per claims 1, 3 and 13-14, Tavor teaches 'developing feature text snippets for each feature, the snippets being phrases to be used when describing ... product features' (see abstract) 'developing user profile text snippets ... generic phrases ...' (see page 4, paragraphs [0049]-[0052])."

The Applicants respectfully disagree with this and reiterate the arguments against this reading of the Tavor reference as follows.

The Tavor reference is a program which uses natural language to directly compare two products which are selected from a group of products. Standard texts and relative statements are combined into sentences which compare selected products in a form such as, *"bigger than..."* or

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*"rather sweet"*, or *"a bit sweeter than..."* (Paragraph [21]). The Tavor specification is strictly described in terms of an algorithm to return a textual **comparison between specified products** based on a relation between the products. Although Tavor's generated descriptions use phrases that are keyed to particular product features, it does not take the user's preferences or requirements into account when deciding which features are most important to talk about, or how to combine feature descriptions with generic phrases (e.g. *"but"*, *"although"*) in order to create a recommendation that is personalized for the user. Tavor also does not generate any text related to user profiles, i.e. combinations of features that are important for specific purposes or types of users (e.g. *"...which is important if you just want to take vaction snapshots"*).There is nothing in "cmp_data(Topic, Value, ProductName)" which has any relation to specific users or their preferences or profiles.

The paragraphs cited by the Examiner in Tavor (Paragraphs [49] – [52]) as supporting his contention that Tavor teaches feature text snippets and user profile text snippets, do not describe or suggest the development, use or existence of user profile text snippets, as well as dynamically generated fluent text that is used to convey the results of product analyses which are claimed by the Applicants. Paragraph [49] in Tavor just describes replacing variables and constructing strings in the abstract. Paragraph [50] indicates that the data passed to the routine "Update_Compare_Text" is a string processed by the routine described in the last paragraph, a list of products, and a string representing the type of information in the previous string ("similar products", "additional info for products", etc.). Paragraph [51] describes how strings are strung together to form a unified sentence (i.e. if the string *"p1 is bigger than p2"* is added to an existing string *"p1 and p2 are big"*, the result is *"Although both p1 and p2 are big, p1 is bigger than p2"*). Paragraph [52] names the main procedure of the program, and indicates that it calls the other processes described earlier. Paragraph [53] states that for the comparison technique proposed by Tavor, certain data fragments will not appear in the output as a function of relational compare vs. the standard comparison technique. Finally, Paragraph [54] describes the assembly of the textual output of the program. It uses similar product information and the topic-value pairs to prepare a textual comparison between specified products based on a relation between the products.

Nowhere in Tavor's method are user profiles, user preferences or requirements mentioned or used. Similarly, generation of dynamic fluent text output is not described or claimed in Paragraph [54] or anywhere else in Tavor. In contrast, Applicants' method is generating dynamic fluent text output with recommendations based on user preferences and requirements (profiles).

To further illustrate this point, paragraph [45] of the Tavor reference presents an example of Tavor's text output with the following phrases:

*"... a product has a blue color, a round shape, a big size...; ... a product is blue, big, round; ...a product is a shirt, a computer, an apple...; ... a product is of a Big Cheese kind, an Expensive*

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*look . . .; ... a blue product, a big product, a fast product... ; a big screen product, a high resolution product, a top quality product...; ... a product is suitable for playing alone...; ... a product is suitable for a big room, a blue wallpaper, KX-456 cellular phone model...; ... a product is used for cooking...; ... a product has a center piece...; ... a product is not blue...; ...a product is made in USA...,"* etc.

It is clear from the above citation that Tavor's output is not producing a dynamically generated fluent text which is as described and claimed by the Applicants. Tavor is generating pseudo-natural language output which comprises short primitive phrases of the type *"Product A has Property B,"* or simple comparisons of the type *"Although both p1 and p2 are big, p1 is bigger than p2"*. The Applicants' method, however, generates dynamic fluent text output with recommendations based on user preferences and requirements, as illustrated, for example, by paragraphs [65-66] and [68] of the application (in which user profile text snippets are here marked with bold face):

"... produce the following paragraphs: [65] The top overall pick is the Epson PhotoPC 650. It has the best collection of convenience features, **which is important if you just want to take vacation snapshots, without having to be a rocket scientist**. It has lower ratings in Portability and Image Quality, **which are also high on the list for the basic snapshot taker**, but has high scores in Storage and Connectivity."

From this example it is clear that the text that the Applicants generate to convey recommendations is human-like, coherently flowing text with appropriate and convincing rhetorical structure. This type of fluent recommendation text is completely different from that in the Tavor reference, and is not present in, nor anticipated by the Tavor reference. The sole point of similarity with Tavor is that Applicants' text sometimes includes statements that compare an individual feature between products, but this implicit comparison is subordinate to the overall goal of the texts, which is to explain how the products' features do or do not match the user's specific requirements. For example, the text may mention that a camera has "lower ratings in Portability and Image Quality" than one or more other models, but this is only of importance because (1) the user expressed an interest in these particular features; and (2) the ratings were assigned relative to the user's specific requirements (which might well call for *less* portability, presumably in tradeoff for other features such as a lower price, for some users). Tavor, by contrast, would generate the same feature-by-feature comparison statements regardless of which features the user was most interested in, and regardless of how they valued the presence or absence of each feature. In other words, users and their requirements do not play any role in Tavor's method and do not influence the product comparisons that are produced by it.

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As can be seen, none of the necessary components of Applicants' method – user preferences and requirements, i.e. profiles; user profile text snippets; personalized recommendations based on user requirements and preferences from user profiles; or dynamically generated fluent text that is used to convey product recommendations – are even hinted at in paragraphs cited by the Examiner (or anywhere else in Tavor).

The Examiner partially acknowledged the above when he stated "Tavor does not teach 'dynamically generated fluent text that is used to convey product analyses ... user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences.'" The Applicants agree with this statement by the Examiner.

## The Mikurak reference

The examiner further stated that:

"Mikurak et al. teaches 'dynamically generated fluent text that is used to convey product analyses ... user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences' (see paragraphs [0883] - [0885], [1259], [2471] and [2531] - [2533])." The Examiner further stated that it would have been obvious to combine the Tavor and Mikurak references in order "to address the comparison of products base[d] on a user's preference" resulting in "the advantage of receiving relevant product data based [on] the individual's profile in a user-friendly manner."

The Applicants respectfully disagree.

The cited paragraphs [0883] - [0885] from the Mikurak reference are relating to an attempt to provide for a description of a comparison between different products and services as well as outputting a recommendation of the products and services based on the inputted needs or on user profile. However, there is no reference to, or suggestion of, or working description of the notion of "user profile text snippets" or "dynamically generated fluent text", either in the cited paragraphs or elsewhere in the Mikurak reference. Nowhere does the Mikurak reference describe what could be construed as a *personalized recommendation featuring dynamically generated fluent text* – that is, a paragraph or paragraphs of text that explains in a rhetorically structured fashion *why* a given product is appropriate for the current customer, *based on his/her specific preferences*. An example of such a text would be the following:

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*"The top overall pick is the Epson PhotoPC 650. It has the best collection of convenience features, which is important if you just want to take vacation snapshots, without having to be a rocket scientist."*

This paragraph is the type of text that would be generated using the techniques taught by the Applicants' invention – it uses user profile text snippets (e.g. *"...if you just want to take vacation snapshots..."*) that are indexed to features of the described product, to generate a coherent explanation of how the product relates to the user's requirements.

A thorough review of the Mikurak reference, including, besides paragraphs cited by the Examiner, the specification, figures, and claims, reveals absence of "dynamically generated fluent text" which is presented as a coherent paragraph or paragraphs. In fact no enabling teaching of a method to generate even non-personalized, non-dynamically generated recommendation output text based on user preferences can be found in the cited paragraphs or the whole Mikurak reference.

Paragraph [1259] of the Mikurak reference further cited by the Examiner describes "...display including personalized stock tickers, links to corporate financial information, and an online brokerage service. Other shareholder services could include historical graphing of the performance of stocks over time." Applicants respectfully note that this paragraph contains no description related to Applicant's method of personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences by the combination of generic phrases, feature text snippets, and user profile text snippets.

Paragraph [2471] of the Mikurak reference further cited by the Examiner describes collaborative filtering which determines "...clusters of users with similar interests, either by asking users explicitly or by observing user selections and actions to determine those interests implicitly. This is an effective technique for creating recommendations for products." Again, Applicants respectfully note that this paragraph contains no description related to Applicant's method of personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences by the combination of generic phrases, feature text snippets, and user profile text snippets.

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Finally, paragraphs [2531] - [2533] of the Mikurak reference cited by the Examiner describe an attempt to provide for a personalization of the recommendations based on the information captured from the user. Applicants respectfully note that this paragraph contains no description related to Applicant's method of personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences by the combination of generic phrases, feature text snippets, and user profile text snippets. As can be seen, the necessary components of Applicants' method cited by the Examiner, including "dynamically generated fluent text that is used to convey product analyses ... user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences" are not present in the Mikurak reference. No concepts, methods, enabling descriptions, or examples corresponding to the Applicants' invention are provided by Mikurak.

## Combination of Tavor and Mikurak references

Having shown how the Tavor and Mikurak references individually differ from the Applicants' method, let us now discuss their combination. The Applicants will further demonstrate that the combination of references does not result in the claimed invention.

## The combination of references does not result in the claimed invention

A feature of the Applicants' invention is the development of product features and user profiles, with which both text snippets and scoring functions can be associated. More specifically, the Applicants' method teaches the following steps:

1. developing a set of features that apply to products in the class, and groupings of these features (paragraph [0024]);
2. developing and testing a scoring function for each feature, which is used to rank different products based on their values of that feature (paragraph [0025]);
3. developing and testing text "snippets" for each feature, which are phrases to be used by the Text Generator component of the Synthesizer when describing or referring to particular product features (paragraph [0026]);

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4. developing and testing user profiles, which are collections of values of features that are considered to be suitable for different types of users of the product class (paragraph [0027]);

5. developing and testing text snippets for each user profile, which are phrases to be used by the Text Generator component of the Synthesizer when describing or referring to particular user profiles (paragraph [0028]) and dynamically generating fluent text output.

Among important components of the Applicants' method, missing from either the Tavor or Mikurak references or combination thereof, is the notion of associating product features and user profiles, on the one hand, and scoring functions and text snippets, on the other. This association is what allows the Applicants' invention to explain to the user *why* a given product is recommended, in terms of particular features and/or user profiles. Other components of the Applicants' method, missing from either the Tavor or Mikurak references, will be analyzed later.

To give an example, consider a recommendation for a digital camera, such as would be generated by the Applicants' invention (paragraph [0068]):

*"The **PhotoPC 650** has **the most convenience features**. Like the **D-220L**, it has **auto focus and red eye reduction**, and the **highest zoom factor**. But it is also the only model with **rechargeable batteries**. All three models have a self timer."*

In order to generate this recommendation, the system must perform the following steps:

1. The Ranking Engine computes a score for each feature (auto focus, red eye reduction, zoom factor, rechargeable batteries, self timer).

2. These scores are passed to the Text Generator, which looks up an appropriate text snippet for each feature, depending on the score (e.g. for the zoom factor feature, given that the current product has the highest score on that attribute among the products selected for comparison, it would select the superlative snippet "*[has] the highest zoom factor*").

3. The text generator combines the feature snippets and other generic phrasing into a fluent, rhetorically structured paragraph, which includes appropriate connecting phrases such as "like the ...", "also", and "but".

This can be summarized by saying that the system takes as *input* a list of feature scores, and produces as *output* a paragraph of text composed primarily of feature text snippets.

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The Applicants' method also extends this process to *user profiles* – for example, in the following example (paragraph [0065]):

*"The top overall pick is the **Epson PhotoPC 650**. It has the best collection of convenience features, which is important if you just want to take vacation snapshots, without having to be a rocket scientist."*

In this case a score is computed for the "snapshot taker" user profile, which is based on the scores for the individual features in the "convenience features" group. This score and user profile are associated with a user profile text snippet, "*[which] is important if you want to take vacation snapshots, ...*".

Again, in this case, the system takes as *input* a user profile score, and produces as *output* a paragraph of text composed primarily of user profile text snippets.

Now, let us consider the combination of the Tavor and Mikurak references and compare the result of this imaginary combination to the Applicants' method. First, Mikurak (paragraphs [0952] and [0960]) teaches a method of "utilizing the customer's profile to prioritize the features of a group of similar, competing products". In this method, "a plurality of items for purchase are displayed, from which the customer is allowed to select multiple, similar items", and the method "creates a hierarchy of the features of the items selected in accordance with the customer's profile". Finally, "... a comparison table is presented with the features organized in a prioritized manner in accordance with the hierarchy. A particular item may be chosen, and similar competing items would be compared to it."

Applying this method to one of the digital camera examples given above, the result would be a comparison table something like the one shown below:

|  | Epson PhotoPC 650 | Nikon D-220L | Fuji Finepix F-410 |
|---|---|---|---|
| Auto focus | Yes | Yes | No |
| Red eye reduction | Yes | Yes | No |
| Zoom factor | 3x | 3x | 2x |
| Rechargeable batteries | Yes | No | No |
| Self timer | Yes | Yes | Yes |

The importance of this table as an aid to comparison shopping would be that it *prioritizes* the listed features for each product, according to the customer's profile, which "may be developed from many sources including customer input, ... customer's purpose of the pending sale,

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customer's shopping habits, etc." (paragraph [0952]). In other words, the features "Auto focus" and "Red eye reduction" would be listed first in the table, since the method has determined these features to be of maximum relevance for the current user, based on various information possibly including direct input from the customer. Similarly, other features, such as size or weight, might not appear in the table at all, if they were deemed to be of little importance to the user.

Now, obviously this comparison table makes no use of "dynamically generated fluent text that is used to convey product analyses ...." As discussed above, Tavor teaches the construction of pseudo-natural language output which comprises short primitive phrases of the type "*Product A has Property B*," or simple comparisons of the type "*p1 is bigger than p2*". This output makes use of phrases defined for particular features – so hypothetically combining Tavor's method with that of Mikurak, instead of the above comparison table one might envision generating a textual comparison summary such as the following:

**Product Comparison: Epson PhotoPC 650 / Nikon D-220L / Fuji Finepix F-410**

- The PhotoPC 650 and the D-220L have auto focus and red eye reduction; the Finepix F-410 does not.
- The PhotoPC 650 and the D-220L have a higher zoom factor than Finepix F-410.
- Only the PhotoPC 650 has rechargeable batteries.
- All three models have a self timer.

Again, this summary is *prioritized* according to the relevance of the various features for the current user (following Mikurak), but it cannot by any means be described as the Applicants' "dynamically generated fluent text that is used to convey product analyses and recommendations tailored to the user requirements and preferences", as we further demonstrate below.

The applicants wish to point out the following ways in which this hypothetical combination of the Tavor and Mikurak references differs crucially from the Applicants' method:

1. **No scoring functions for features** – Neither Tavor nor Mikurak teach the development of a scoring function for each product feature, which is used to rank different products based on their values of that feature (Applicants' paragraph [0025]). Mikurak teaches prioritization of features, i.e. determining *which* features are most relevant to a user, but teaches no method of quantifying the desirability of the *value* of a feature for that user (e.g. whether the user desires a large zoom

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factor or a small one). The Mikurak method might present the "Zoom factor" feature prominently to the user because of its derived relevance, but would do nothing to explain to the user how a high or low *value* of this feature related to the user's preferences or requirements, or user profile.

2. **No user profiles (in Applicants' sense)** – Similarly, neither Tavor nor Mikurak teach the development of user profiles, as defined by the Applicants. The Applicants define user profiles as "collections of values of features that are considered to be suitable for different types of users of the product class, and which can serve to help users of the product guide narrow down their product preferences quickly" (paragraph [0027]). Thus, an example of a user profile would be the "snapshot taker" profile, which consists of desired values for different features – e.g. "Yes" for Auto focus, Red eye reduction, and Self timer, and "3x" for Zoom factor. In the Mikurak reference, on the other hand, a "user profile" refers to a varied assortment of collected data about the user – including "customer input, customer buying habits, customer income level, customer searching habits, customer profession, customer education level, customer's purpose of the pending sale, ... etc." (paragraph [0952]). Nowhere is this linked to desired values of product features – again, Mikurak's method might *prioritize* a feature (based on information such as the user having previously performed a search on a keyword like "zoom"), but Mikurak teaches nothing related to how *values* of a feature suit or do not suit individual users.

3. **No user profile text snippets** – Neither Tavor nor Mikurak teach the development of user profile text snippets – Tavor's phrases are all indexed to product features, and Mikurak has no text snippets at all, including for "user profiles", in the Applicants' sense as described above.

4. **No fluent, rhetorically structured text** – With reference to the example text shown above, which could hypothetically be generated by a method that combined the Tavor and Mikurak references, clearly cannot be characterized as "fluent, rhetorically structured text", in the sense of the Applicants' method. This text is not *rhetorically structured to provide product recommendations* – that is, even though the content is expressed in complete, grammatical sentences, the generator has not applied rules to determine the best way of laying out the information in the sentences in order to convince the user of the suitability (or unsuitability) of a given product for their needs. This type of rhetorical structuring is at the heart of the Applicants' method – the generated text must make use of phrases like *however, also*, etc.; sentence/phrase ordering; and user profile text snippets; in

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order to convey a message to the user about how the product's features compare to the user's particular requirement. In contrast, the hypothetical text above merely lays out the various feature values for the different product, and leaves it up to the user to sort out which feature values make the different products suitable or unsuitable for their needs.

In addition to the arguments presented before, and for the reasons just listed, the Applicants respectfully submit that any combination of the Tavor and Mikurak references, even if they are combinable, cannot result in "dynamically generated fluent text that is used to convey product analyses and recommendations tailored to the user requirements and preferences". The reasons for this are reiterated and summarized as follows:

1. In the earlier discussion the Applicants' method was characterized as taking as *input* a list of feature scores, and producing as *output* a paragraph of text composed primarily of feature text snippets. Similarly, it could take as *input* a user profile score, and produce as *output* a paragraph of text composed primarily of user profile text snippets.

2. Since the hypothetical Tavor/Mikurak combination would only address *prioritization* of features, as opposed to scoring of feature *values* with reference to the user's requirements, no corresponding output could be produced consisting primarily of feature text snippets. Similarly, since the Tavor/Mikurak hypothetical combination will not be able to address user profiles in the Applicants' sense (i.e. as collections of desired feature *values*) at all, much less user profile text snippets, neither could an output be produced composed primarily of user profile text snippets.

3. Therefore, hypothetical Tavor/Mikurak combination would not generate "recommendations tailored to the user requirements and preferences" – again, the generated texts would not be *recommendations*, in that they would simply present a list of product feature values for comparison by the user; and they would not be tailored to the user requirements and preferences, in the sense of being customized according to the feature *values* desired by the user.

Therefore, as the Applicants have demonstrated, the Tavor and Mikurak references either alone or in combination do not contain all of the components of the present invention. Accordingly, those skilled in the art would not be able to combine these references to develop the method of the present invention.

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Therefore, it is respectfully suggested that the rejection of claims 1, 3, 5 through 11, 13, and 14 under 35 USC 103 (a) as being unpatentable over Tavor in view of Mikurak is overcome.

### Claim 5

The examiner also stated that:

"As per claim 5, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:
-- Tavor teaches 'testing the user profile text snippets' (see page 5, paragraphs [0057]-[0059])."

In addition to the arguments presented above, the Applicants note that there is nothing in the paragraphs cited by the Examiner which mentions user profile text snippets at all, nor is there anything about testing them. Claim 5 should be allowable for the same reasons as Claim 1, on which it depends, plus the additional limitation it contains.

### Claim 6

The examiner also stated that:

"As per claim 6, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:
-- Tavor teaches 'providing access to the product recommendation ...' (see page 4, paragraphs [0058]-[0059])."

In addition to the arguments presented above, the Applicants argue that in the paragraphs cited by the Examiner and in the Tavor's whole reference, Tavor teaches comparisons between products. To the contrary, the Applicants' claim 6 does not involve providing access to product comparisons, only to personalized recommendations as claimed in Claim 1 on which Claim 6 depends. Claim 6 should also be allowable for the same reasons as Claim 1 on which it depends, plus the additional limitation it contains.

### Claim 7

The examiner also stated that:

"As per claim 7, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:
-- Tavor teaches 'a computer network ...' (see abstract)."

While Tavor does teach a computer network, the Applicants argue, in addition to the arguments presented above, that a computer network is only the first part of the Applicants' Claim 7. The entire claim should be considered in comparison to Tavor, and Tavor *does not* teach "providing customers with product recommendations over a computer network, *by combining the*

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*generic phrases with feature text snippets and user profile text snippets to produce personalized recommendations for the products featuring dynamically generated fluent text that conveys product analyses and recommendations tailored to the user requirements and preferences.*"
Claim 7 should be allowable for the same reasons as Claim 1 on which it depends, plus the additional limitation it contains.

### Claims 8-11

The examiner also stated that:

"As per claims 8-11, these claims are rejected on grounds corresponding to the arguments given above for rejected claims 1-7 and are similarly rejected including the following:
-- Tavor teaches 'display and explanation of a comparison between several products' (see page 4, paragraphs [0050]-[0051])."

The Applicants respectfully disagree. In addition to the above arguments by the Applicants, and for the reasons cited above by the Applicants, Claims 8, 9, 10, and 11 are allowable over Tavor in view of Mikurak. In addition, the Applicants' method and claims does not claim comparison between several products as it is stated by the Examiner. To the contrary, Claims 8, 9, 10, and 11 claim providing personalized dynamically generated fluent text delivering product recommendations.

### Response to Examiner's <u>Arguments</u>

The Examiner further stated (emphasis added):

"As per applicant's arguments regarding 'Although Tavor's generated descriptions phrases ... it does not take user's preferences or requirements into account ... does not generate any text related to user profiles ...', examiner disagrees and maintains that Tavor's comparison of products and offering a **recommendation** includes that recommendation been based on a **target element** and therefore reads on applicant's claim language of recommending products based on a profile element."

The Applicants respectfully disagree with Examiner's two key points in this paragraph:

1. That there is any notion of "target element" taught by the Tavor reference that corresponds to the Applicants' notion of a "user profile";

2. That the system described by Tavor generates *recommendations* for products.

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On the first point, recall that in the Applicants' terminology, a "user profile" refers to a set of requirements for certain product attributes, corresponding to a class of potential users of a given product type. For example, for digital cameras, one user profile might be a "snapshot taker", which would be associated with feature requirements such as the following:

○ The "Auto Focus" feature is desirable;

○ The "Zoom Factor" feature should have a value between 2x and 3x.

The existence of user profiles performs two functions in the Applicants' method:

1. It allows the system to locate products suitable for a given customer, given the customer's selected user profile;

2. It allows the system to generate natural language explanations of why the located products are suitable for the customer, by assembling user profile text snippets and feature text snippets into a coherent natural-language recommendation.

In other words, the Applicants' method takes as *input* an answer to the question "What kind of user are you?", and generates as *output* a recommendation that says, in effect, "Here are some products, and why they are good for you."

In Tavor's method, by contrast, there is no notion of "user profile" – the input to Tavor's method is an answer to the question "What products would you like to look at?", and the output is a text that says, in effect, "Here is a comparison of the products you selected." As we argue below, this makes Tavor's method quite different from that of the Applicants, despite the superficial similarities.

Tavor's method begins with a specification of two or more products, as well as optionally a set of "topics" (i.e. attributes) on which to compare them (Tavor, Paragraph [09]). This initial selection of individual products and/or attributes is presumably what the Examiner refers to as the "target element". However, this is very different from what the Applicants refer to as a "user profile" or element thereof. Rather than the system selecting appropriate products to be recommended based on a user profile, Tavor's method relies on some unspecified method of preselecting products (presumably including direct selection by the customer).

Further, Tavor's method deals exclusively with *analysis* and *comparison* of a set of similar products, and in no way can the text generated by this method be characterized as a *recommendation*. The term "recommendation" implies that an advisor (either human or virtual) is

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trying to convince a person of the suitability of a given product for that person's use. In order to
make such a recommendation, the advisor must draw connections between the person's *needs*, on
the one hand, and the *attributes* of the product or products, on the other hand. Consider the
following example of an interaction between a human advisor (a camera shop salesperson) and a
prospective customer:

> **CUSTOMER:** I'm looking for a digital camera...
>
> **SALESPERSON:** Sure – what do you want to use it for?
>
> **CUSTOMER:** Mostly just taking snapshots; I don't want to have to fiddle with a lot of
> controls.
>
> **SALESPERSON:** Well, you might want to consider Camera A or Camera B – both of
> them have auto focus, which makes it easy to take snapshots quickly. Camera A
> has a 3X zoom lens, which is good for taking shots from a small range of
> distances; Camera B has a 10X zoom, which makes it a bit bulky and not as easy to
> carry.

In this dialog, the advisor does two crucial things:

1. He selects a group of products to present to the customer, based on attributes of the
   products and how they relate to the user's needs.
2. He explains how the values of each attribute do or do not meet the user's needs.

As a result, the customer can make an informed decision about which camera is best for
his/her individual needs, thanks to the background knowledge of the advisor, as embodied in the
advisor's *recommendation*.

> Now, compare this to the following alternative interaction:
>
> **CUSTOMER:** I'm looking for a digital camera...
>
> **SALESPERSON:** Can you tell me which models you're interested in?
>
> **CUSTOMER:** Well, I'm really not sure – how about Camera A and Camera B?
>
> **SALESPERSON:** Sure – what would you like to know about them?
>
> **CUSTOMER:** Again, I'm not really sure – what features do they have, and how do they
> compare?
>
> **SALESPERSON:** Camera A and Camera B both have auto focus, Red-eye Reduction,
> and rechargeable batteries. Camera A has a 3X zoom lens, and Camera B has a
> 10X zoom lens.

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This time, the advisor does not select products or attributes based on the user's needs, and does not explain how attribute values relate to these needs – it is up to the customer to pick models to compare, and the advisor gives a comparison of all the attributes, rather than just the ones that are most important for the customer. In this case, the advisor does not provide enough information for the customer to make an informed decision – in particular, he does not point out that a 10X zoom lens is probably an undesirable feature for a "snapshot taker", even though it might sound like a better feature than a 3X zoom on paper. Again, it is up to the customer to know such things in order to make an informed selection. So the advisor is providing a *comparison* and to some extent an *analysis* of the products (though not in terms of the user's needs), but makes no *recommendation* – the customer has to make up his own mind about what features or models are most appropriate for him.

This example illustrates the key differences between the Applicants' method and that of Tavor. The Applicants' method, as in the first interaction, generates a *recommendation*, based on a *user profile*, while Tavor's method, as in the second interaction, provides only *comparison* and *analysis*, with reference only to an initial selection of products and/or attributes. In Tavor's method there is nothing that can be construed as a recommendation, since there is no representation of the needs of the customer; therefore the system cannot generate text describing how well a given product meets those needs.

The Examiner further stated (emphasis added):

"As per applicant's arguments regarding 'Tavor (Paragraph [49]-[52] as supporting his contention that Tavor teaches feature text snippets and user profile text snippets, do not describe or suggest the development, use or existence of user profile text snippets, as well as dynamically generated fluent text that is used to convey the results of product analyses ...' examiner refers applicant to Tavor's teachings of **natural language (i.e. descriptions and phrases),** clearly is synonymous to applicant's fluent text element. Further, Tavor's product analyses using descriptions and phrases and offering a **recommendation** is equivalent to applicant's teachings of suggesting products based on a profile element."

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Again, as argued above, Tavor's method does not generate a recommendation in the appropriate sense of the term, since his method makes no use of or reference to user profiles or user profile text snippets, or equivalent notions.

Furthermore, the Applicants argue that Tavor's "teaching of natural language (i.e. descriptions and phrases)" is by no means synonymous with the Applicants' method of generating fluent, natural language text, since Tavor does not employ certain key techniques to construct a text that is coherently flowing and has appropriate and convincing rhetorical structure.

To illustrate these techniques, consider again the following example recommendation paragraph generated using the Applicants' method:

"The top overall pick is the Epson PhotoPC 650. It has the best collection of convenience features, which is important if you just want to take vacation snapshots, without having to be a rocket scientist. It has lower ratings in Portability and Image Quality, which are also high on the list for the basic snapshot taker, but has high scores in Storage and Connectivity."

The key techniques employed by the text generator to ensure the coherence, fluency, and rhetorical force of the generated paragraph include the following:

1. **Overall rhetorical structuring**: The sentences in the paragraph, and the clauses within each sentence, are ordered and combined in such a way as to form a coherent, convincing argument as to why the item is worthy of recommendation, based on the user's preferences. The paragraph begins with a general assertion (that this is the #1 pick), followed by a more detailed justification of this assertion. The most positive features are listed first, followed by the less positive features. The final sentence includes the conjunction "but" to contrast the lower scores with the higher scores. In the second and third sentences, the "which ..." clauses serve to connect the feature descriptions to the user's preferences (user profile).

2. **Appropriate aggregation**: The generator decides how to combine the various phrases into separate sentences, in order to make the recommendation optimally readable and non-repetitive – for example, the feature descriptions are broken up into the second and third sentences, rather than one long sentence; and the second

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sentence says "It has lower ratings in Portability and Image Quality", rather than the more straightforward but repetitive phrasing, "It has lower ratings in Portability and it has lower ratings for Image Quality".

3. **Pronominalization**: The generator inserts pronouns where appropriate in order to make the text read more naturally, rather than repeating the product name every time: "The top overall pick is the **Epson PhotoPC 650**. It has the best .... **It** has lower ratings in ..., but **[it]** has high scores in Storage and Connectivity." The rules for appropriate use of pronouns (including omitting the pronoun altogether in the last sentence) require a representation of the grammatical and rhetorical structure of the paragraph.

Each of these techniques contributes to the human-like quality, coherent flow and appropriate and convincing rhetorical structure of the recommendation texts generated by the Applicants' method.

Tavor's method, on the other hand, does not employ any of these techniques, and therefore results in much more rigid-sounding output, with no overall fluency or rhetorical force. As described previously, Tavor is generating pseudo-natural language output which comprises a series of short primitive phrases of the type "*Product A has Property B*," or simple comparisons of the type "*Although both p1 and p2 are big, p1 is bigger than p2*". Specifically lacking in Tavor's method are the three key techniques described above:

1. **Overall rhetorical structuring**: Tavor's output is simply a feature-by-feature description of a product, or comparison of two or more products, with no attempt to summarize the appropriateness of the product for a given user, or to justify such a summary statement with more detailed descriptions. There is no link made between feature values and their importance for the user, and the features are not ordered in terms of any principle of relevance to a specific user's requirements. Indeed, there is no structuring of the descriptions at all into a coherent paragraph – Tavor's text simply consists of a series of independent statements that are unconnected to each other either grammatically or rhetorically.

2. **Appropriate aggregation**: Although Tavor's output does make use of some basic aggregation techniques (combining similar phrases, e.g. "both p1 and p2 are big",

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and using contrastive connectors such as "although"), these techniques are not used appropriately as part of a larger strategy to produce a convincing recommendation – for example, if the user has a requirement for a big product, it is appropriate to say "Although both p1 and p2 are big, p1 is bigger than p2", in the context of a recommendation for product p1. However, if the user requires a smaller product, and p2 is being recommended, it is much more appropriate to say "Although both p1 and p2 are big, p2 is not as big as p1." Tavor's method does not allow for this sort of distinction.

3. **Pronominalization**: In Tavor's method, there is no apparent use of pronouns when referring to products; rather, they are always referred to by their full names. This is in fact in keeping with the structure of Tavor's output, as a series of syntactically unconnected sentences – further evidence that it cannot be characterized as "fluent text".

For these reasons, the Applicants respectfully dispute the Examiner's assertion that Tavor's output "clearly is synonymous to applicant's fluent text element."

The Examiner further stated (emphasis added):

"As per applicant's arguments regarding 'nowhere in Tavor's method are user profiles, user preferences or requirements mentioned or used ...', examiner maintains that Tavor's teachings involving the comparing of products and rendering a recommendation, is based on a **target element**. Further, Tavor's recommendation is based on an initial **trigger of interest** and then a comparison is made of specific products and this, reads on applicant's claim language."

Again, as the Applicants have argued above, there is a key distinction between the Applicants' method and that of Tavor, in that Tavor's initial "target element" or "trigger of interest" is supplied by the user of the system, in the form of an explicit designation of one or more products and/or attributes, and the system is merely providing an analysis and comparison of the selected elements. This target element may or may not correspond to a product that should be recommended to the user, depending on the user's knowledge of how product attributes relate

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to her needs: If the user already has perfect knowledge of what attribute value she needs and which products possess these values, then she has no need of a recommendation – she can simply select the products she knows to be most suitable, and compare prices. If, on the other hand, she does not know what attribute values she needs or which products possess those values, then Tavor's system will not help her, since it cannot select products for her or explain how the attributes of selected products do or do not meet her needs. In either case, Tavor's system does not help her to get from a knowledge of her needs to a knowledge of which product is the best choice for her.

The Examiner further stated (emphasis added):

> "As per applicant's arguments regarding 'Nowhere does the Mikurak reference describe what could be construed as a personalized recommendation featuring dynamically fluent text ...', examiner maintains that Tavor's teaching of comparing rendering of product recommendation is phrases combined with Mikurak teachings of rendering product recommendations **based on profile information** in terms of various text phrases (i.e. fluent text) reads on applicant claim language above."

The Applicants respectfully disagree and point out that in light of the above arguments showing the inapplicability of the Tavor reference by itself, as well as reiterating that the combination of the Tavor and Mikurak references does not result in the Applicant's claimed invention:

1. **No scoring functions for features** – Neither Tavor nor Mikurak teach the development of a scoring function for each product feature, which is used to rank different products based on their values of that feature (Applicants' paragraph [0025]). Mikurak teaches prioritization of features, i.e. determining *which* features are most relevant to a user, but teaches no method of quantifying the desirability of the *value* of a feature for that user (e.g. whether the user desires a large zoom factor or a small one). The Mikurak method might present the "Zoom factor" feature prominently to the user because of its derived

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relevance, but would do nothing to explain to the user how a high or low *value* of this feature related to the user's preferences or requirements, or user profile.

2. **No user profiles (in Applicants' terminology)** – Similarly, neither Tavor nor Mikurak teach the development of user profiles, as defined by the Applicants. The Applicants define user profiles as "collections of values of features that are considered to be suitable for different types of users of the product class, and which can serve to help users of the product guide narrow down their product preferences quickly" (paragraph [0027]). Thus, an example of a user profile would be the "snapshot taker" profile, which consists of desired values for different features – e.g. "Yes" for Auto focus, Red eye reduction, and Self timer, and "3x" for Zoom factor. In the Mikurak reference, on the other hand, a "user profile" refers to a varied assortment of collected data about the user – including "customer input, customer buying habits, customer income level, customer searching habits, customer profession, customer education level, customer's purpose of the pending sale, ... etc." (paragraph [0952]). Nowhere is this linked to desired values of product features – again, Mikurak's method might *prioritize* a feature (based on information such as the user having previously performed a search on a keyword like "zoom"), but Mikurak teaches nothing related to how *values* of a feature suit or do not suit individual users.

3. **No user profile text snippets** – Neither Tavor nor Mikurak teach the development of user profile text snippets – Tavor's phrases are all indexed to product features, and Mikurak has no text snippets at all, including for "user profiles", in the Applicants' sense as described above.

4. **No fluent, rhetorically structured text** – As described above, a hypothetical combination of the Tavor and Mikurak references would result in a presentation similar to the following, in which the features are listed in a prioritized order according to various background information about the customer:

**Product Comparison: Epson PhotoPC 650 / Nikon D-220L / Fuji Finepix F-410**

- The PhotoPC 650 and the D-220L have auto focus and red eye reduction; the Finepix F-410 does not.
- The PhotoPC 650 and the D-220L have a higher zoom factor than Finepix F-410.
- Only the PhotoPC 650 has rechargeable batteries.
- All three models have a self timer.

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The Applicants reiterate that not only does such a presentation not constitute "fluent, rhetorically structured text", based on the arguments given above against the Tavor reference (involving key techniques used by the Applicants' text generator), but it does not constitute a *recommendation* at all, since it makes no connection between the value of a given feature and the user's needs – the "Zoom factor" feature may be very important to a given user, but nowhere does this presentation make explicit whether 2X, 3X, or 10X are appropriate values of this feature for a given customer. As in previous examples given above, it is up to the user to interpret the significance of each feature value, and in effect generate his own recommendation.

**Conclusion**

Finally, the independent Claims 1 and 8 in the present application clearly provide for the method of the invention to prepare a personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences by the combination of generic phrases, feature text snippets, and user profile text snippets. Neither the Tavor reference, nor the Mikurak reference, nor the combination of these two references, shows or suggests all of the features of the Applicants' method and said combination does not result in the present invention.

Therefore, it is respectfully suggested that the rejection of independent Claims 1 and 8 under 35 USC 103 (a) as being unpatentable over Tavor in view of Mikurak is overcome. Dependent Claims 3, 5-7, 9-11, and 13-14, being dependent upon and further limiting independent Claims 1 and 8, should also be allowable for the same reasons, as well as for additional limitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

The Applicants believe that the claims are patentable over the prior art, and that the case is in condition for allowance of all claims therein. Such action is thus respectfully requested.

Respectfully submitted:
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Patent Agent for the Applicants
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## CLAIMS APPENDIX

**Claim 1.** A method of creating an automated natural language product recommendation system for providing customers with a personalized recommendation of a product having a plurality of features, each customer being associated with a user profile comprising a collection of values of features that are considered to be suitable for a user of the product, comprising the steps of:

      i.    developing feature text snippets for each feature, the snippets being phrases to be used when describing or referring to particular product features;

      ii.   developing user profile text snippets for each user profile, the snippets being phrases to be used when describing or referring to particular user profiles;

      iii.  providing generic phrases such that combining the generic phrases with feature text snippets and user profile text snippets produces a personalized recommendation for the product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences.

**Claim 3.** The method of claim 1, in which step (a) further comprises the step of testing the feature text snippets.

**Claim 5.** The method of claim 1, in which step (b) further comprises the step of testing the user profile text snippets.

**Claim 6.** The method of claim 1, further comprising the step of providing access to the product recommendation over a computer network.

**Claim 7.** The method of claim 6, further comprising the step of providing customers with product recommendations over a computer network, by combining the generic phrases with feature text snippets and user profile text snippets to produce personalized recommendations for the products featuring dynamically generated fluent text that conveys product analyses and recommendations tailored to the user requirements and preferences.

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**Claim 8.** A method of providing customers with personalized natural language product recommendations over a computer network comprising the steps of:

a)  creating an automated product recommendation system for providing customers with a personalized recommendation of a product having a plurality of features, based on a user profile comprising a collection of values of features that are considered to be suitable for a type of user of the product, comprising the steps of:

    i.  developing feature text snippets for each feature, the snippets being phrases to be used when describing or referring to particular product features;

    ii.  developing user profile text snippets for each user profile, the snippets being phrases to be used when describing or referring to particular user profiles; and

    iii.  providing generic phrases;

b)  accepting a request from a customer over a computer network, the request comprising selecting a user profile defining preferred values for product features;

c)  generating a ranked list of products using preferred values from the user profile, and product feature data, such that rankings are based on each product's feature data weighted according to the preferred values;

d)  combining generic phrases with feature text snippets for individual features and user profile text snippets for user profiles to generate a display comprising a personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences; and

e)  returning the display to the customer over the computer network.

**Claim 9.** The method of claim 8, in which step (b) further comprises the step of storing the preferred values in a user preferences database.

**Claim 10.** The method of claim 8, in which the preferred values form step (b) are requested by specifying a user preference from a database.

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**Claim 11.** The method of claim 8, in which the display generated in step (d) comprises at least a display and explanation of product rankings based on user requirements and preferences.

**Claim 13.** The method of claim 1, further comprising the steps of developing groupings of the features, which serve to organize them thematically, and which groupings can themselves be viewed as features.

**Claim 14.** The method of claim 8, further comprising the steps of developing groupings of the features, which serve to organize them thematically, and which groupings can themselves be viewed as features.

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## EVIDENCE APPENDIX


None



## RELATED PROCEEDINGS APPENDIX


None